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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,225	08/06/2001	Stephen J. Plante	A0312/7410 WRM	8975
23628	7590	05/23/2006	EXAMINER	
WOLF GREENFIELD & SACKS, PC			TORRES, JOSEPH D	
NULL			ART UNIT	
FEDERAL RESERVE PLAZA			PAPER NUMBER	
600 ATLANTIC AVENUE			2133	
BOSTON, MA 02210-2206			DATE MAILED: 05/23/2006	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,225

Applicant(s)

PLANTE ET AL.

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 18, 25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 18, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 03/23/2006 have been fully considered but they are not persuasive.

The Applicant contends, "The Examiner cites Amon at column 2, lines 24-31 in which Amon describes:

"adding a branch metric to the first path metric to obtain a first result; subtracting the branch metric from the second path metric to obtain a second result; comparing the first result to the second result, and selecting which is greater to become a first survivor metric, and refetching the first previous path metric during a third single clock cycle;"

A careful review indicates that Amon does not teach or suggest adding, subtracting, comparing and selecting operations carried out in a third single clock cycle. In fact, Amon teaches the following operations in the third single clock cycle.

"comparing the first result to the second result, and selecting which is greater to become a first survivor metric, and refetching the first previous path metric during a third single clock cycle;"

The adding operation described by Amon is separated from the subtracting operation by a semicolon, and the subtracting operation of Amon is separated from the comparing, selecting and refetching operation by a semicolon. Thus, the adding and subtracting

operations are separate operations and are not performed during the third single clock cycle. This conclusion is confirmed by the remainder of the Amon patent”.

The Examiner disagrees and asserts that col.1, lines 18-31 in Amon explicitly recite, “The data structure for performing the ACS butterfly portion of a Viterbi algorithm includes: *fetching both a first previous path metric for a first state and a corresponding first trellis value during a first single clock cycle; fetching both a second previous path metric for a second state and a corresponding second trellis value during a second single clock cycle; adding a branch metric to the first path metric to obtain a first result; subtracting the branch metric from the second path metric to obtain a second result; comparing the first result to the second result, and selecting which is greater to become a first survivor metric, and refetching the first previous path metric during a third single clock cycle*”.

The Applicant proposes that *adding a branch metric to the first path metric to obtain a first result and subtracting the branch metric from the second path metric to obtain a second result* occur in a clock cycle other than the third clock cycle. The Examiner would like to point out that the algorithm in Amon occurs in exactly three cycles and anyone of ordinary skill in the art at the time the invention was made or who was literate in the English language that col.1, lines 18-31 in Amon are meant to be interpreted exactly as written that the first clock cycle includes the step of *fetching both a first previous path metric for a first state and a corresponding first trellis value*; the second clock cycle includes the step of *fetching both a second previous path metric for a second state and a corresponding second trellis value*; and the third clock cycle

includes the steps of *adding a branch metric to the first path metric to obtain a first result; subtracting the branch metric from the second path metric to obtain a second result; comparing the first result to the second result, and selecting which is greater to become a first survivor metric, and refetching the first previous path metric*. If the Applicant seriously believes any of the steps for the third clock cycle can be performed in the first or second clock cycles along with the steps for the first and second clock cycles, the Examiner invites the Applicant to explain how they can be since the adding and subtracting steps require the first and second path metrics acquired during the first and second clock cycles. Amon clearly teaches *adding a branch metric to the first path metric to obtain a first result; subtracting the branch metric from the second path metric to obtain a second result; comparing the first result to the second result, and selecting which is greater to become a first survivor metric, and refetching the first previous path metric* simultaneously in the same clock cycle. There is no other way to correctly interpret col.1, lines 18-31 in Amon nor would one of ordinary skill in the art at the time the invention was made make the mistake of interpreting col.1, lines 18-31 in Amon any differently than as written. Furthermore; one of ordinary skill in the art at the time the invention was made including Amon would have recognized that adding and subtracting are combinational operations that are generally performed instantaneously and that logically adding could take place instantaneously at the end of the first clock cycle after the first fetching step during the first clock cycle and that the subtracting step for, the same reasons, could take place instantaneously at the end of the second clock cycle after the second fetching step during the second clock cycle (Note: since adding and

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subtracting are combinational operations performing the adding instantaneously at the end of the first clock cycle and subtracting instantaneously at the end of the second clock cycle are substantially equivalent and indistinguishable from performing the adding and subtracting instantaneously at the beginning of the third clock cycle; Note: adders and subtractors are not clocked devices). But that is not how Amon has written the algorithm. Amon clearly writes that the adding and subtracting take place after the first and second clock cycles and prior to the comparing and refetching steps in the third clock cycle. One of ordinary skill in the art at the time the invention was made can only conclude that since adding and subtracting are instantaneous non-clocked combinational steps that the adding and subtracting are performed instantaneously at the beginning of the third clock cycle during the third clock cycle.

The Examiner disagrees with the applicant and maintains all rejections of claims 1-6, 18, 25 and 26. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 1-6, 18, 25 and 26 are not patentably distinct or non-obvious over the prior art of record in view of the references, Wicker (Stephen b. Wicker, "Error Control Systems for Digital Communication and Storage, Prentice-Hall, 1995, pages 108-119 and 176-191), Moore; Scott A. et al. (US 6349318 B1, hereafter referred to as Moore) and Inoue; Tohru et al. (US 5712861 A, hereafter referred to as Inoue) in view of Omura; Jimmy K. (US 4891781 A) as applied in the last office action, filed 12/19/2005. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Amon; Yossi et al. (US 5742621 A, hereafter referred to as Amon).

See the Non-Final Action filed 12/19/2005 for detailed action of prior rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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3. Claims 2-6, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amon; Yossi et al. (US 5742621 A, hereafter referred to as Amon) in view of Benedetto et al. (S. Benedetto, D. Divsalar, G. Montorsi, and F. Pollara; Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes; TDA Progress Report 42-124, February 15, 1996; hereafter referred to as Benedetto).

See the Non-Final Action filed 12/19/2005 for detailed action of prior rejections.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOSEPH TORRES
PRIMARY EXAMINER



Joseph D. Torres, PhD
Primary Examiner
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